Contribution ID: **919** Type: **Poster**

Development of a multi channel silicon avalanche photodiode sensor for low light imaging detection.

Friday, July 6, 2018 8:15 PM (15 minutes)

The silicon avalanche photodiode (APD) is a highly sensitive semiconductor photo sensor that converts lights to electrons by using the photoelectric effect with a high gain through avalanche multiplication in its pn junction. It has various preferable characteristics such as operating with high quantum efficiency, large dynamic range, light-weight, robustness, insensitivity to magnetic field, and measuring low amount of lights thanks to the gain of about 100. As a monolithic device, however, it has dimensions of 5 x 5 mm2 ~ 16 x 16 mm2.
We have been developing the APD sensor for measurements of lights from scintillating crystals in particle and nuclear physics experiments. We simulated the pn junction with high electric field of about 400 V on n type substrate. Based on the simulation result, we designed and fabricated APD sensors with arrays of 5 x 5 and 10 x 10 channels in an area of about 5 x 5 cm2 in order to cover a big area with an imaging capability. We will present the simulation, design, and fabrication results of the multichannel silicon APD sensors manufactured in Korea.

Primary authors: Dr LEE, Hye Young (Center for Underground Physics (CUP), Institute for Basic Science (IBS)); Dr JEON, Jin-A (Center for Underground Physics (CUP), Institute for Basic Science (IBS)); Prof. KIM, Yeong Duk (Center for Underground Physics (CUP), Institute for Basic Science (IBS)); Dr LEE, Hyun Su (Center for Underground Physics (CUP), Institute for Basic Science (IBS)); Dr LEE, Moo Hyun (Center for Underground Physics (CUP), Institute for Basic Science (IBS)); Ms JEGAL, Jin (Department of Physics, Kyungpook National University); Prof. KIM, Hong Joo (Department of Physics, Kyungpook National University)

Presenter: Dr LEE, Hye Young (Center for Underground Physics (CUP), Institute for Basic Science (IBS))

Session Classification: POSTER

Track Classification: Detector: R&D for Present and Future Facilities